



Another Perplexing Pair...



Dear Teacher,

Like growth and development, the **life span** and the **life cycle** of organisms are important concepts within the NYS Science Core Curriculum Guides. Although the terms sound similar and are often used interchangeably, they are very different.

So What's the Difference? Here are some definitions and examples from CRSEP scientists to help sort out these concepts:

- **Life span:** Life span is the *maximum length of time* organisms of a certain kind (species) remain alive under conditions that provide the organisms their basic needs.

- The life span of some familiar species of organisms:

- | | |
|---------------------------|----------------------------|
| 1. Asian elephant | 40 years |
| 2. black bear | 18 years |
| 3. lobster | 15 years |
| 4. kangaroo | 7 years |
| 5. opossum | 1 year |
| 6. Painted Lady Butterfly | about 7 weeks |
| 7. Brassica plant | about 6 weeks |
| 8. cricket | about 5 weeks ¹ |

- **Life cycle:** All organisms undergo developmental changes during their life span. For instance:

1. Flowering plants progress from the:

- formation of a seed,
- through germination of the seed,
- through development of a seedling into a mature plant with flowers capable of producing seeds.

The *entire sequence of stages* is the plant's life cycle.

2. Human organisms progress from the:

- formation of a zygote (by the union of an egg and sperm),
- through the development of the fetus,
- through its birth,
- through growth and development of the newborn into a mature adult male or female capable of producing sperm or ova.

The *entire sequence of stages* is the human organism's life cycle.

Questions to Ponder... Here are some questions to encourage your students to think about the concepts of **life cycle** and **life span**.

- Under what conditions might an organism not live out its expected life span?
What are some specific examples of these conditions?
(Answers could include discussions of predators and disease.)
- What are the differences between our definitions of life span and life cycle and the definitions found in the Core Curricula? How do you account for these differences?

What Do the Standards Say? Here are sections from the Core Curricula that deal with life span and life cycle. We think the sheer number of them is an indication of their importance within these documents.

Elementary Science Major Understandings:

- 4.1a Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.
- 4.1b Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant.
- 4.1c The length of time from beginning of development to death of a plant is called its life span.
- 4.1d Life cycles of some plants include changes from seed to mature plant.
- 4.1e Each generation of animals goes through changes in form from young to adult. This completed sequence of changes in form is called a life cycle. Some insects change from egg to larva to pupa to adult.
- 4.1f Each kind of animal goes through its own stages of growth and development during its life span.
- 4.1g The length of time from an animal's birth to its death is called its life span. Life spans of different animals vary.

Intermediate Science Major Understandings:

- 4.3d Patterns of development vary among animals. In some species the young resemble the adult, while in others they do not. Some insects and amphibians undergo metamorphosis as they mature.
- 4.3e Patterns of development vary among plants. In seed-bearing plants, seeds contain stored food for early development. Their later development into adulthood is characterized by varying patterns of growth from species to species.

What's Next? We encourage you to share with us your thoughts and your students' ideas on the Questions to Ponder. Any comments or questions about life span or life cycle? Any ideas for future email topics? Contact us!

We would like to hear your responses or your students, on the Questions to Ponder

¹ Life span information from the following sources:

- Quintessential Instructional Archive, <http://www.quia.com/mc/131347.html>
 - The Life Cycle of Butterflies, Copyright 1992, Carolina Biological Supply Company
 - Lucky Lure Cricket Farm, Copyright 2001, <http://www.cricketslucky lure.com/crickets.html>
 - Experiments with Plants, Copyright 1992, Carolina Biological Supply Company
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